HLLDTμL 9110

HIGH VOLTAGE HEX INVERTER

HIGH LEVEL LOGIC DIODE-TRANSISTOR MICROLOGIC® INTEGRATED CIRCUITS

A FAIRCHILD COMPATIBLE CURRENT SINKING LOGIC PRODUCT

GENERAL DESCRIPTION

The HLLDTμL 9110 is a high voltage, high threshold hex inverter with extremely good D.C. and A.C. Noise Immunity. The circuit is useful in applications involving a high noise environment or high voltage supplies which prohibit the use of DTμL.

The 9110 contains six basic logic building blocks from which more complex functions (Flip-Flop, Shift Registers, etc.) can easily be built.
The 9110 is available in the hermetically sealed cermic Dual-In-Line Package (DIP), designed for automated and low cost insertion techniques.

FEATURES

- High Voltage Operation V_{CC} Range 12 to 20 V.
- Utilizes inexpensive external input diodes to facilitate a high density building block approach and a very high logic Fan-In where desired.
- High D.C. Noise Immunity 6.5 V minimum
- High A.C. Noise Immunity 10 V at 150 ns.

APPLICATIONS

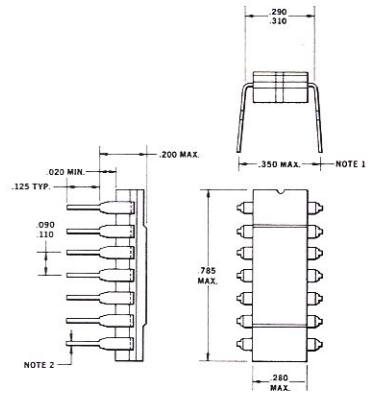
Industrial Control Logic, Automotive Logic, Lamp Driver, Relay Driver

ABSOLUTE MAXIMUM RATINGS

Storage Temperature	-65°C to 150°C
Operating Temperature	0°C to 75°C
V_{CC}	25 V
Output Voltage	25 V
Output low current	40 mA

TYPICAL DUAL IN-LINE PACKAGE

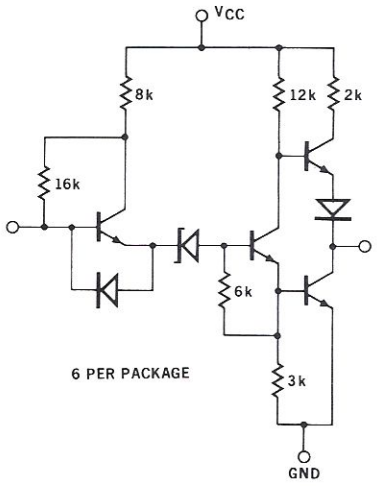
In Accordance With
JEDEC (TO-116) Outline



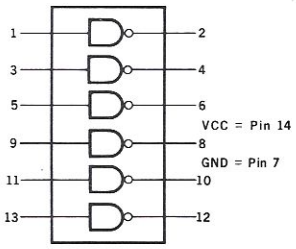
NOTES:
1. Leads are intended for insertion in hole rows on .300" centers. They are purposely shipped with "positive" (.350) misalignment to facilitate insertion.
2. Board-drilling dimensions should equal your practice for a conventional .020 inch diameter lead.

ORDER PART NO. U6A911059X

CIRCUIT DIAGRAM



LOGIC DIAGRAM



* Fairchild patent pending

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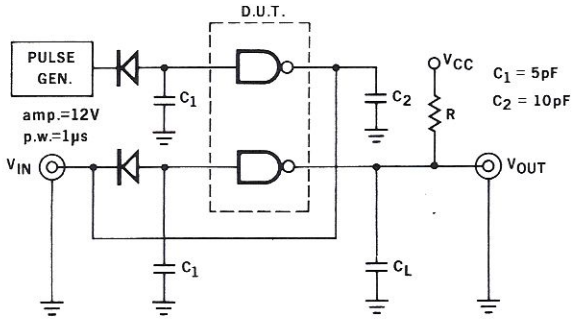
ELECTRICAL CHARACTERISTICS

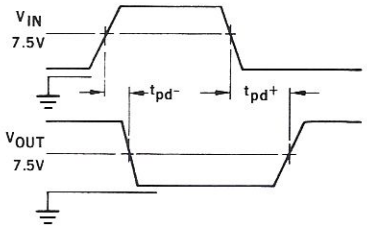
SYMBOL	LIMITS 0°C MIN.	0°C MAX.	25°C MIN.	25°C TYP.	25°C MAX.	75°C MIN.	75°C MAX.	UNITS	CONDITIONS AND COMMENTS
V_{OH}			$V_{OH\ (min.)} = (V_{CC} - 2.0\,V)$ $V_{OH(typ.)} = (V_{CC} - 1.5\,V)$					Volts	V_{CC} = 12 to 20 V I_{OH} = -0.1 mA @ V_{IL}
V_{IL}					7.0		6.8	Volts	V_{CC} = 12 to 20 V
V_{OL1}		0.5		0.25	0.5		0.5	Volts	V_{CC} = 12 V I_{OL} = 10 mA @ V_{IH}
V_{OL2}		1.0		0.5	1.0		1.0	Volts	V_{CC} = 20 V I_{OL} = 20 mA @ V_{IH}
V_{IH}	8.6		8.5					Volts	V_{CC} = 12 to 20 V
I_F		-1.24		-0.81	-1.16		-1.16	mA	V_{CC} = 20 V V_F = 0.5 V
I_{SC}		17.0		9.0	16.3		15.6	mA	V_{CC} = 20 V V_{out} = 0 V
I_{PDH}		30		19	28		28	mA	V_{CC} = 20 V Inputs open.
I_{PDL}		9.5		6.0	9.0		9.0	mA	V_{CC} = 25 V Inputs GND Outputs = 25 V
t_{pd+}				145	400			ns	See switching
t_{pd-}				100	200			ns	test circuit.

SWITCHING TIME TEST CIRCUIT



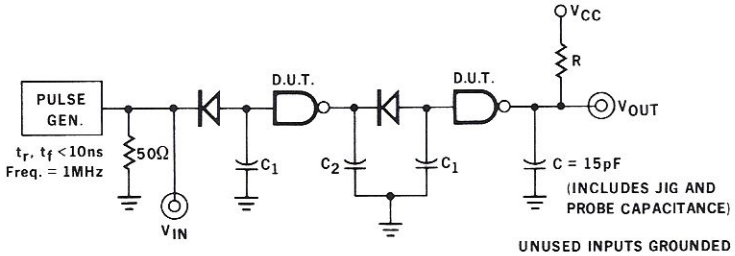
C_1 = 5pF
C_2 = 10pF

C_L = 15pF
t_{pd^-} : R = 2.4k
t_{pd^+} : R = 24k
*INCLUDES JIG CAPACITANCE
DIODES ARE FDH6
GND UNUSED INPUTS



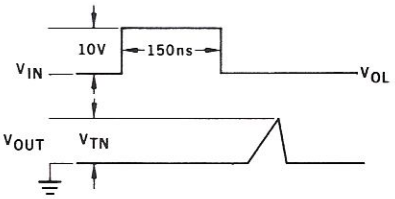
NOTE: TESTS ARE PERFORMED WITH FDH6 INPUT DIODE

A.C. NOISE IMMUNITY TEST CIRCUIT

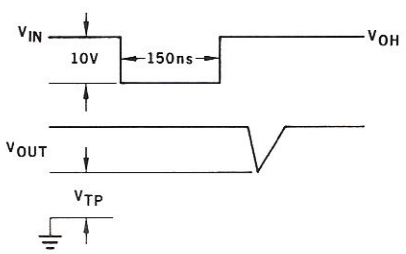


UNUSED INPUTS GROUNDED
DIODES ARE FDH6
C_1 = 5pF
C_2 = 10pF

LOW LEVEL AC NOISE IMMUNITY



HIGH LEVEL AC NOISE IMMUNITY



TEST CONDITIONS AND LIMITS					
TEST	LIMIT		V_{CC}	R	T_A
	MIN.	MAX.	(Volts)	kΩ	°C
V_{TP}	8.5 V		17	24k	25
V_{TN}		7.0 V	17	2.4	25

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